

EE / CprE / SE 491

Machine Learning Heterogeneous Computing

Week 8 Report

Time: Apr. 2 - Apr. 9
Client: JR Spidell
Faculty Advisor: Diane Rover

Team Members:

Sandro Panchame
Rudolph Nahra
Alek Comstock
Jeffery Kasper

Weekly Summary

This week, the team finalized our pseudocode for using OpenAMP to manage communication between processors. On the Machine Learning side, we have continued to develop our safety criteria and troubleshoot our issues with the Marabou tool.

Past Week Accomplishments

Jeffery K: Completed pseudo code for OpenAMP APU processors. Began learning about OpenAMP's package, libmetal, so that the pseudo code can be turned into runnable c code.

Sandro P: Browsing papers on NN Verification. Spoke with Jeffrey and asked questions to satisfy my curiosity on the Kria boards. Found some lectures done by Guy Katz, they were on NN verification in general. Couldn't find much information on how to set up the properties

Alek C. Set up getting ready to convert pseudocode into parts of actual code, focusing on openAMP functions

Rudolph: Further troubleshooting Marabou. Discovered that it is likely a fundamental issue with how tensorflow is saving the model - the saved file might be incomplete. Further developed criteria for testing safety of model.

Pending Issues

Sandro P: Will need to figure out how to define the properties that will run alongside the model in Marabou. Instructions might be available somewhere, but not readily available. Worst case scenario, will have to go off of the Marabou python file and the .nnet file used in an example.

Another option, use the Marabou API instead of the binary file.

Alek C. Need to refine pseudo as it was missing details on how the handshake actually works. I will need to deep dive into the openAMP documentation to find any and all appropriate function calls.

Rudolph: Need to learn more about tensorflow saved file format to fix the problem with running Marabou

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sandro Panchame	Going through some papers, I found some lectures by guy katz and watched some of them. Spoke with Jeffrey a bit and asked questions about the Kria boards	4	43
Rudolph Nahra	Troubleshooting Marabou issues, investigated tensorflow savedModel format. Further developed criteria for testing safety of model.	6	51
Alek Comstock	Designed pseudocode, preparing for translating pseudo into actual code. Preparing for actual board programming	2	38
Jeffery Kasper	Pseudo code for OpenAMP communication and data processing, and learning about Libmetal.	6	45

Plans for Coming Week

Jeffery K : Begin to turn the pseudo code into C code that utilizes OpenAMP for inter-processor communication.

Sandro P: Figure out how to get our model to run on Marabou. Go through some papers, see if I can find something on how to set up properties for testing Neural Networks. Will ask about it under issues on the github page.

Rudolph: Fix our model so it saves correctly and can be parsed by Marabou

Alek C.: start adding openAMP API calls into the pseudocode. Be prepared to present pseudocode to the group and convert the pseudocode into actual code, bit by bit, but first will deep dive into the openAMP documentation to gleam any and all related information.